

A new species of the genus *Morulodes* (Collembola: Neanuridae) from Hokkaido, Northern Japan

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Abstract A new collembolan species of the genus *Morulodes* was collected from the northernmost part of Hokkaido, Northern Japan. The present species can be separated from other congeneric species by having a distinct inner tooth on unguis and having a femoral long seta flattened apically. This is the first record of the genus from Asia.

Key words: Collembola, *Morulodes*, new species, northernmost part of Japan

Introduction

The genus *Morulodes* belonging to the family Neanuridae is characterized by having maxilla with a very long, multiciliate lamella and lacking PAO (postantennal organ). Up to the present, four species of the genus have been recorded only from North American Continent and its contiguous islands: *Morulodes aleutus* (BÖDVARSSON, 1960), *M. millsi* CASSAGNAU, 1955, *M. primus* (BÖDVARSSON, 1960) and *M. serratus* (FOLSOM, 1916). Although CHRISTIANSEN & BELLINGER (1998) included “*Neanura (Morulodes) ambigua* CHRISTIANSEN & BELLINGER, 1980” and “*N. (M.) setosa* CANBY, 1926” into the same group, these species should be excluded by morphology of mouth parts.

A new form of the genus was found at the northernmost part of Hokkaido, Northern Japan. Close examination revealed this form to be a new species clearly different from other congeneric species. Description of this new species is given here.

Description of new species

Morulodes rishirianus sp. nov.

Body length: 3 mm.

Color blue, being darker on tubercles and paler on ventral side.

General body shape (Fig. 1) stout, dorsally convex, resembling *Morulina*. Basal antennal segment and body

segments furnished with reticulated tubercles clothed serrated setae (Fig. 2A).

Body tubercles arranged as follows: On head, clypeal and frontal tubercles fused into a large central tubercle, on which usually an un-reticulated area appears centrally. Ocular tubercles separated. Occipital zone same as segment of Th. I, furnished with 3 pairs of tubercles, i.e. dorsal, dorso-lateral and lateral tubercles. Th. II to Abd. III each with 4 pairs of tubercles, i.e. dorso-internal, dorso-external, dorso-lateral and lateral tubercles. Abd. IV with an unpaired median tubercle besides 2 pairs of tubercles, i.e. dorso-lateral and lateral tubercles. Abd. V with 2 pairs of tubercles, i.e. dorsal and ventral tubercles, of which dorsal pair is large, forming tail end of body. Abd. VI with a pair of ventral tubercles, which are visible only ventrally, enclosing anus together with a pair of anal lobes.

Body clothed with long and serrate setae; dorsal setae widened and blunt apically, lateral ones thinner, acuminate and serrate rather feebly. Short and smooth sensory hairs seen on some dorsal tubercles. Chaetotaxy as follows;

Head: $\begin{matrix} +3 \\ 7 \end{matrix} \dots (3)$
 $(4) \dots (6) \dots (7 \sim 8)$
 Th. I: $(1) \dots (2) \dots (2)$
 Th. II: $(3) \dots (3 \sim 4 + s) \dots (3 + s) \dots (3)$
 Th. III: $(3) \dots (4 + s) \dots (3 + s) \dots (3)$
 Abd. I: $(2) \dots (3 + s) \dots (2) \dots (3)$

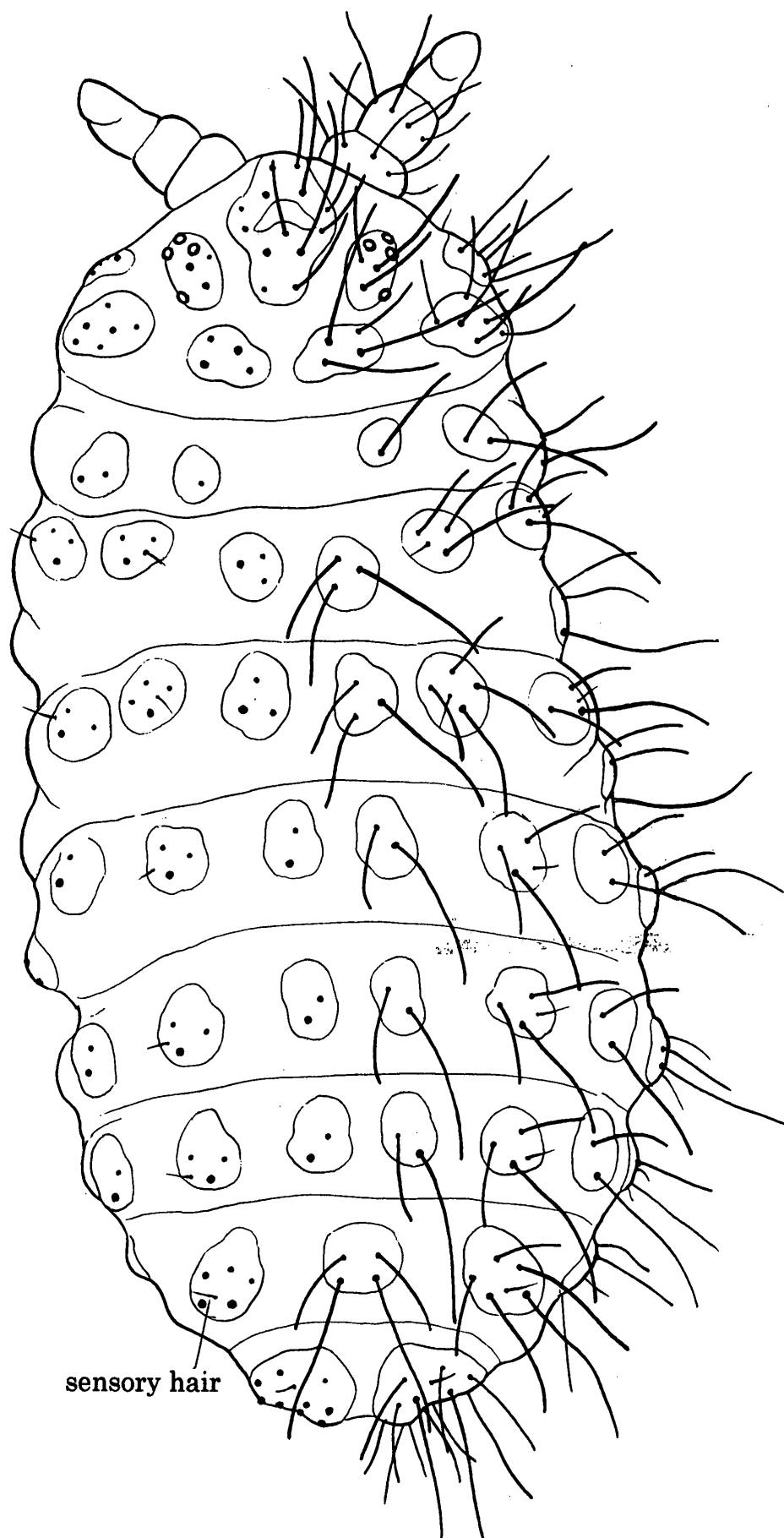


Fig. 1. *Morulodes rishirianus* sp. nov. Chaetotaxy, dorsal side.

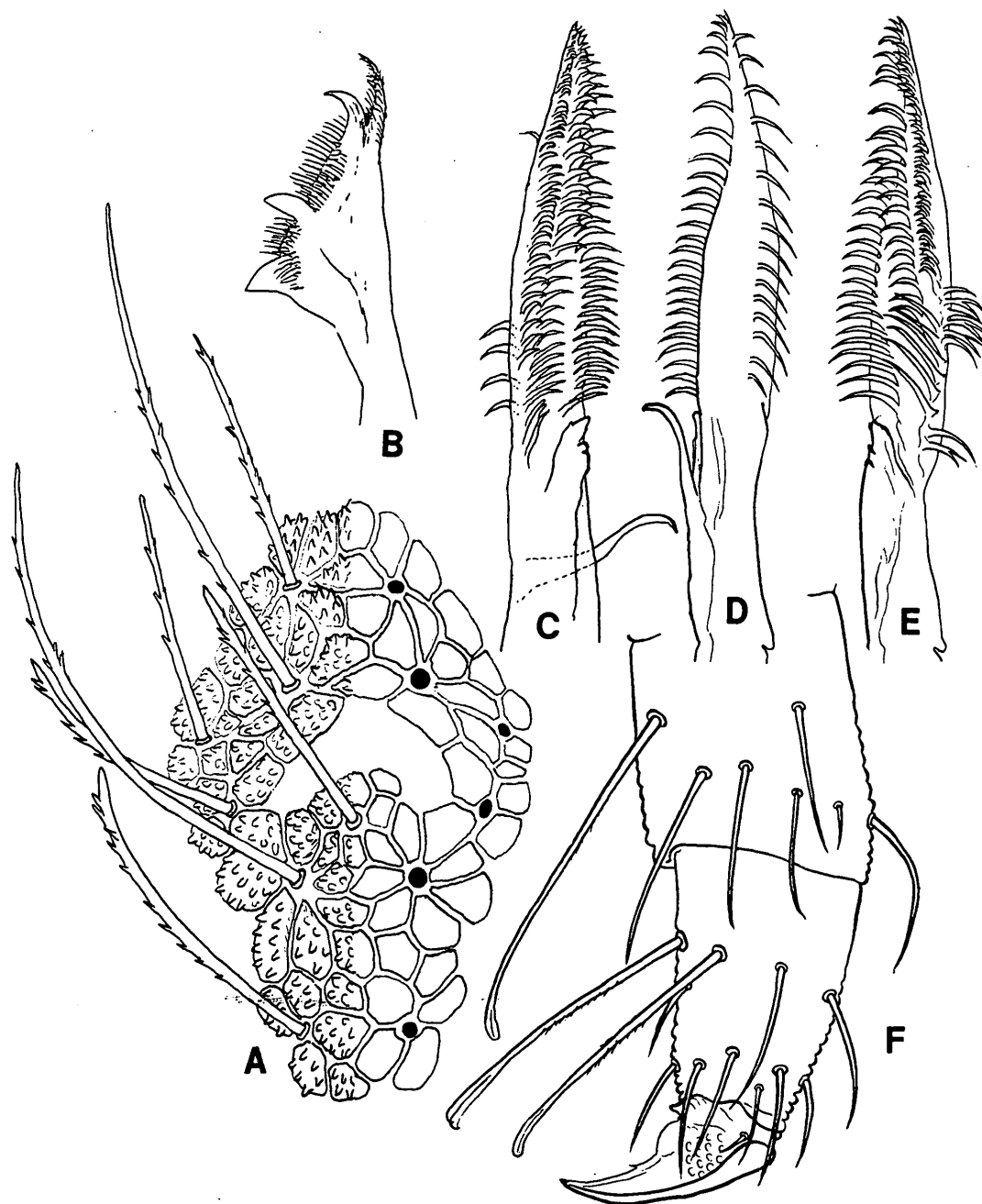


Fig. 2. *Morulodes rishirianus* sp. nov. A, Central tubercle; B, Mandible; C-E, Maxilla F, Hind leg.

Abd. II: (2) ... (3 + s) ... (2) ... (4)
 Abd. III: (2) ... (3 + s) ... (2) ... (4~5)
 Abd. IV: +2) ... (5~6 + s) ... (8~9)
 Abd. V: (6 + s) ... 5
 Abd. VI: 8-9

Boxes mean ventral location.

Mouth parts well-developed, being peculiar to the genus. Mandible (Fig. 2B) with 3 teeth and an apical tail-like appendix. The latter bearing minute spinules on

whole inner side up to tip, while the former without any spinules on distal part, but with fine spinules or hairy fringe on only inter-teeth area.

Maxilla (Fig. 2C-E) consisting of 3 rods: median long rod with 4 rows of elongate fringe; one of remainder rods short, stout and straight, with 3-4 blunt teeth on its apex; and last one short, thin and curved, without teeth.

Antennae short, stout and conical. Ant. III organ typical of Neanuridae. Ant. IV with 6 olfactory hairs and 3 indistinct apical bulbs.

Eyes 4 + 4, in two groups of 3 anterior and 1 posterior ocelli.

Unguis (Fig. 2F) broad, strong and granulated basally, with a distinct inner tooth. Tibiotarsus and femur with 2 and 1 long setae flattened at tip, respectively.

Holotype: One specimen of adult female from a shrub forest on the summit of Mt. Rishiri-dake, Rishiri Island, 1610–1710 m a.s.l., 27.VII.1980, J. AOKI leg. Paratype: 11 specimens, same data as for the holotype, and 8 specimens from secondary grassland dominated by *Reynoutria sachalinensis* (FR. SCHM.) NAKAI, the northern coast of Onuma Lake, Wakkanai City, 1 m a.s.l., 26.VII.1980, J. AOKI leg. Holotype (Type No. 3150 Kyushu Univ.) and a paratype are deposited in Entomological laboratory, Faculty of Agriculture, Kyushu University. Other paratypes are in authors' collections.

Remarks: The present species resembles *M. primus* in the number of eyes and morphology of mandible. The former is, however, easily separated from the latter by unguis having an inner tooth, maxilla with 3 rods, femoral long seta flattened at apex and tibiotarsal long setae distinctly flattened (in *M. primus*, unguis without inner teeth; maxilla with only 2 rods; femoral long seta pointed at apex; and tibiotarsal long setae indistinctly flattened). Further *M. primus* is distinctly different from the new species by having only one seta on dorso-lateral tubercle of Th. II (see BÖDVARSSON, 1960).

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摘 要

田中真悟 (〒819-0041 福岡市西区拾六町 5-9-40) ・ 一澤 圭 (神奈川県立生命の星・地球博物館 〒250-0031 小田原市入生田499) : 北海道最北端より得られたアオフサトビムシ属の1新種.

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利尻島および稚内市より, アオフサトビムシ属の1新種が見出され, リシリアオフサトビムシ (新称) *Morulodes rishirianus* sp. nov. と命名し記載した. 本種は, 主爪に明瞭な内歯を持ち, 腿節の長毛の先端が平たくなっていることにより, 同属の他種と区別される. なお, これは本属のアジア地域における初記録である.

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